## PATENT ABSTRACTS OF JAPAN

(11)Publication number:

2002-285018

(43)Date of publication of application: 03.10.2002

(51)Int.Cl.

C08L101/10 CO8K 5/098 C09J109/00 C09J157/06 009.1171/00 C09J201/10 C09K 3/10

(21)Application number: 2001-088406 (22)Date of filing:

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## (54) MOISTURE-CURABLE RESIN COMPOSITION (57)Abstract:

PROBLEM TO BE SOLVED: To provide a moisture-curable resin composition of which the surface tackiness disappears in a short time as compared with the existing moisturecurable resin composition.

26.03.2001

SOLUTION: This moisture-curable resin composition is composed of 100 pts.wt. of an organic polymer (a) containing a silvi group and having at its molecular terminal or on its side chain at least one functional group having a silicon atom bound to a hydrolyzable group per molecule and 0.1-20 pts.wt. of a tin compound (b) of a carboxylic acid which is expressed in general formula (1) below (wherein, R1, R2, R3 are each a 1-10C hydrocarbon group that may be identical or different) where the a carbon atom of the carboxylic acid is a tertiary carbon.

$$Sn \left( O - C - C - R^{2} \right) = \begin{cases} O & R^{3} \\ 0 & C - C - R^{2} \\ R^{3} & R^{3} \end{cases}$$
 (1)

\* NOTICES \*

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2,\*\*\*\* shows the word which can not be translated. precisely.

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## CLAIMS

[Claim(6)] [Claim 1]Silvi group content organicity polymer (a) 100 weight section which has one basis which has [Claim 1]Silvi group content organicity because own if small four molecules 1 to a molecular

the silicon atom combined with a hydrolytic basis even if small [ per molecule ] to a molecular terminal or a side chain, and a following general formula (1): [Formula 1]

| R 2

sn (0-c-c

Among a formula, R1, R2, and R3 are hydrocarbon groups with 1-10 carbon stoms, respectively, and [Claim 2]The moisture curing type resin camposition according to claim 1 which is a moisture curing type resin composition of 2 liquid type which consists of a main agent component (A) containing said composition, wherein the carbon atom of the alpha position of carboxylic ecid expressed consists of the tin compound (b) 0.1 of the carboxylic acid which is the third class carbon – 20 weight sections. differing, even if R1, R2, and R3 are the same to mutual -- \*\*\*\* -- a moisture curing type resin sityl group content organicity polymer (a), and a curing catalyst ingredient (B) containing said tin compound (b) ingredient.

unsaturated compound, or e polymer of dione series as a main chain. Idan 4The mosture curing type rearin composition according to say one of olaims 1 to 3 in which lightm. 4The mosture curing type rearin composition according to say one of olaims 1 to 3 in which said tin composition (b) is SUTA/ARSU servey makers or SUTA/ARSU screw neo december. Claim 3]The moisture curing type resin composition according to claim 1 or 2 in which said silyl group content organicity polymer (e) is what uses a polymer of polyether and an ethylenic

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recisely.

!\*\*\*\* shows the word which can not be translated.
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## DETAILED DESCRIPTION

Detailed Description of the Invention]

Filted of the fiventholi-Elsenbelly this invention reflects to a missionic carrier give reals consolition and the standards a real season as assisting agent, adhesives, stc, with whole it burdens about a mosture outlying year reals composition for a stant frum fairt maker as in agent component and a curing catchyst ingradient, and auritees teachment disappeare for a short frum.

Describtion of the Prior Artifys a usuful hardwring reash constituent, the thing using the organic Describtion of the Prior Artifys a usuful hardwring reash constraints and subjects of such services the properties of the prior that subjects of the prior service, as a result obtained of for which is subject to unsuremed companied the prior to the prior to the prior to the prior that the prior to the prior

Problem(s) to be Solved by the Invention/Prosecur, alone and influence which does each of organic Problem(s) to be Solved by the Invention by the Company and an organic bed company and organic bed company and organic bed company and the C

[Means for Solving the Problem]Then, wholeheartedly, as a result of research, this invention persons for a network configure to the consolidation which has the first cuttability which is equal to 2—thyleheartoo is call this currently conventionally used as a curring catabits, tr-this colylate, set, and surface tackforce according for a set for the configuration of the configuration of

[0003]That it, that invention provides the followign meisture unting type resid composition.

May group content organisty podymer (ox) 100 weight section which has one basis which has the saiden nature members with a spraydively basis down if amalf [.per molecule ] to a molecular terminal or a sideo nature members with a spraydively basis over if amalf [.per molecule ] to a molecular terminal or a sideo and following general formed (1): [0000]

$$\begin{pmatrix}
0 & R_1 \\
0 & C & C \\
0 & C & C & R_2
\end{pmatrix}$$
(1)

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JP,2002~285018,A [DETAILED DESCRIPTION]

(0007)/Aenorg a formula, R1, R7, and R2 are bydecoarbon groups with 1-10 carbon atoms.

Land and Land and Land are served as a served as were — a most tree currier to represent the served and the control county type resin composition, wherein the carbon atom of the lables patched or debowlide and the served countier of the this compound (b) R1 of the carbonylis add which is the third class carbon 20 weight sections.

(2) A moisture curing type resin composition given in (1) paragraph which is a moisture curing type

in composition of Equil type which consists of a maje assett component (A) containing said salst grown content or grainful profiles (10) and a curing catalyst ingredient (30) containing said the appropriate of the appropriate sale of the appropriate of the activity catalyst ingredient (30). A meditire catalyst type result commonition given in (10 or (20 prangewith in which said all groun commonities catalyst type result commonities given in (10 or (20 prangewith in which said all groun commonities of the objective of fine series as a main claim.

Embodiment of the Invention[The basis which has the silicon atom whost combined with the formal properties of the Invention[The basis which has the silicon atom whost combined with the whole hosts is to an endought remmind or a raise short per noticeable. In old may be hereafter coiled the silicon group combined with the act and any properties of a marginal power which it has one great and making more combined with the structure powerfund; properties and set a main chain of this company. The algorithm is policy or of mithelian could popular and notice at a main chain of this company. The superior of the set of mithelian could popular and other and state, are mentioned. The fassisted they of these mine chain polymer is proferred at a noon tomorrham. (DODQ) as said shiviers could polymer thrust or proferred at a noon tomorrham.

acrylonitrile chloroprene copolymer, polyisobutylana, polyacrylic astar, polymethacrylic acid ester, etc 0012]Aithough the molacular weight of the organic polymer (a) usad by this invention does not have mentioned. More specifically Polybutadiene, a styrene butadiene copolymer, an acrylonitrile butadiene group, an amino silyl group, an amino oxysilyl group, an oxime silyl group, and an amide silyl group are 0010]As a polymer of an ethylenic unsaturated compound and diene series. Homopolymers, such as copolymer, An ethylene-(meta) acrylic ester copolymer, polyisoprene, A styrene isoprene copolymer, [0011]The silicon group combined with said hydrolytic basis is a basis which causes a condensation hydrolytic basis may combine with one silicon atom. As a silicon group combined with the hydrolytic copolymer, An ethylene-butadiene copolymer, ethylene propylene rubber, an ethylene-vinylacetate Specifically, a halogenation silyl group, alkoxy silyl groups, an alkenyl oxysilyl group, an acyloxy silyl from the range of 1-3. The number of the hydrolytic bases combined with one silicon atom may be combined with the hydrolytic basis may exist in the end of a polymer molecule, or may exist in the side chain. Even if the silicon group combined with the hydrolytic basis has few polymers per mentioned. Here, the number of these hydrolytic bases combined with one silicon atom is chosen publicly known as a method of combining with said main chain polymer the silicon group combined sobutylene, butadiene, isoprene, and chloroprene, or these two or more sorts of copolymers are maction by using a catalyst etc. if needed under existence of humidity and a cross linking agent. dialkoxy silyl group, and the Tori alkoxy silyl groups are included) is preferred. The silicon group molecule, it is preferred that it averages per molecule from a point of a cure rate and hardened basis, handling is an easy point, and especially alkoxy silyl groups (mono- alkoxy silyl groups, a material nature, and there are 1.5 or more pieces with one piece although it is good. A method one, and that of them may be [ two or more ]. Furthermore, the hydrolytic basis and the nonastrictions in particular, the thing of Polymer Division is hypervisoosity, and since it becomes athylene, propylene, acrylic ester, methacrylic acid ester, vinyl scetate, acrylonitrile, styrene, an isobutylene-isoprene copolymar, polychloroprene, a styrene chloroprene copolymer, an are mentioned. These may be used independently or may use two or more kinds together. used independently, and may use two or more sorts together. with the hydrolytic basis is employabla.

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IP.2002-285018,A [DETAILED DESCRIPTION]

tesirable [ a thing ] as a numbar average molecular weight. Although such an organic polymer can be ifficult [a use top] when it is considered as a hardening resin constituent, 30000 or less are too nanufactured by a publicly known method, commercial items, such as KANEKA MS polymer by

nore are used. In a general formula (1), as a hydrocarbon group with 1~10 carbon atoms shown by R<sup>1</sup>, carboxylic acid whose carbon atom of the alpha position of carboxylic acid expressed with a general ormula (1) is the third class carbon as a curing catalyst (b) used for this invention, or two sorts or 3. and R<sup>3</sup>, For example, straight chain shape or branched state alkyl groups, such as methyl, ethyl. propyl, isopropyl, butyl, isobutyl, sec-butyl, pentyl, heptyl, octyl, 2-ethylhexyl, nonyl, and decyl, are 0014]In the carboxylic soid tin salt expressed with a general formula (1), it is a following general 0013]One sort of the tin compound (it may be hereafter called carboxylic acid tin salt) of the (aneka Corp., may be used for it. ormula (2) : [0015]

Formula 3]
$$S \ln \left( \begin{array}{c} C H_3 \\ C - C - R^4 \\ C H_3 \end{array} \right) \qquad (2)$$

with a general formula (2) is the third class carbon, and, generally carboxylic acid whose at least two stoms) is preferred. Here, a carbon atom of an alpha position in carboxylic acid tin salt expressed 0016]What is expressed with (inside of formula and R<sup>4</sup> is a hydrocarbon group with 1-10 carbon

oranched state alkyl groups, such as methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec-butyl, pentyl, ydrocarbon group with 1-10 carbon atoms expressed with R4. For example, straight chain shape or sydrocarbon groups of an alpha position are methyl groups is called neo carboxylio acid. As a

0017]When said carboxylic gold tin sait is illustrated concretely. SUTANASU screw neo decanoate, SUTANASU screw pivalate, SUTANASU screw neo pentanoate, SUTANASU screw neo hexanoate, neptyl, octyl, 2-ethylhexyl, nonyl, and decyl, are mentioned.

undecanoate, SUTANASU screw neo dodecanoate, SUTANASU screw neo tridecanoate, SUTANASU screw neo tetradecanoate, etc. are mentioned, and these are independent, or can be mixed and used such a compound can be manufactured by a publicly known method. In these carboxylic acid tin salt, they are SUTANASU screw pivalate from points, such as the easa of dealing with it on use, and the tability of a compound, and SUTANASU screw neo decencete. [SUTANASUBISU (2, 2 \*\*JIME chill SUTANASU scrow neo heptanoste, SUTANASU screw neo octanoste, SUTANASU screw neo

invention, it is preferred to usa it at a rate of 0.5 - 10 weight section 0.1 to 20 weight section to ally! 0018] As for especially a curing catalyst (b), in a moisture curing type resin composition of this otanoate)] is preferrad.

0019]In order to promote hardening in a moisture curing type resin composition of this invention and ess than said range, hardening performance is bad and surface tackiness may not be improved. When to improve adhesion to a substrate. Can use publicly known various amino group substitution alkoxy group content organicity polymar (a) 100 weight section. Unless quantity of a curing catalyst (b) is said range is exceeded, the physical properties of a hardened material and stability may fall.

cthylenediamine, these partial hydrolysates, etc. are mentioned. Vinyl alkoxy silane compounds, such sthylenediamine, delta-aminobutyl (methyl) diethoxysilane, N, and N' \*\*BISU (trimethoxysilylpropyl) as vinyltriethoxysilane, vinyltrimetoxysilane, and a vinyl trisopropoxy silane, can be used for propyltrimethoxysilane, gamma \*\*AMINO propyl triethoxysilane, N-(trimethoxysily)propyl) silane compounds or a condensate of those, and specifically, gamma \*\*AMINO

antinging agent, and a solvent, may be further added to a moistura curing type resin composition of gent, colorant, a plasticizer, a hardaning accelerator, a concrete retarder, a dripping inhibitor, an (0020]An additive agent usually added by hardening setup-of-tooling products, such as a bulking mprovement in adhesion to a substrate,

0021]As a hardening accelerator, specifically For example, a butylamine, octylamine, Lauryl amine, n rexadecyl amine, dibutyl amine, monoethanolamine, Diethanolamine, triethanolamine, nttp://www4.ipdl.inpit.go.jp/ogi-bin/tran\_web\_ogi\_ejje?abv\_u=http%3A%2F%2Fwww4.ipdl.i.. 2010/04/30

diethylenetriamine, Triethylenetetramine, oleylamine, cyclohexylamina, Benzylamine, diethylamine propylamine, xylylena diamine, Triathylenadiamina, polyoxy ethylenadiamina, polyoxy

system organio oompounds, such as morpholine, N-methylmorpholine, 2-ethyl-4-methylimidazole, and iluminum silicate, aluminium hydroxide, a zinc oxide, magnesium oxide, a titanium dioxide, etc. are 0022]As a bulking agent, specifically Calcium carbonate, kaolin, talo, Fumed silioa, sedimentation nature silioa, a silicio acid anhydride, hydrous silicio acids, clay, Calcination clay, glass, bentonite, organic bentonite, a milt balloon, glass fiber, asbestos, a glass filament, grinding quartz, diatomite, propylenediamine. Guanidine, diphenylguanidine, 2,4,6-tris(dimethyl aminomethyl) phenol, Amine he 1.8-diazabicyclo (5.4.0) undecane 7 (DBU), ara mentioned.

0023[Specifically as colorant, iron oxide, carbon black, copper phthalocyanine blue, Phthalocyanine

as trioctyl phosphate and tricresyl phosphate, cpoxidized soybean oil, and epoxy stearic acid benzyl, a as butyl oleate, and pentaerythritol ester. Epoxy system plasticizers, such as phosphoric ester, such sebacate, Ester species of polyol compounds, such as allphatic-carboxylic-acid ester species, such outylbenzyl phthalate, dioctyl adipate, Succinic acid dioctyl, succinic acid diisodecyl, diisodecyl 0024JAs a plasticizer, specifically Dibutyl phthalate, dioctyl phthalate, Phthalic ester, such as chlorinated paraffin, etc. are used. Green, otc. are used.

.0026]As other additive agents, adhesion grant agents, such as phenol resin and an epoxy resin, an (0025]Specifically as a dripping inhibitor, hydrogenation castor oil, a silioio aoid anhydride, organic ultraviolet ray absorbent, radical chain inhibitor, a peroxide decomposition agent, various kinds of cantonita, colloidal silica, etc. are used.

moisture curing type resin composition of 2 liquid type which consists of a main agent component (A) .0027]As for a moisture curing type resin composition of this invention, it is preferred to use it as a antiaging agents, etc. are used.

nore can be blended suitably. For a curing catalyst ingredient (B), besides said tin compound (b), said amino group substitution alkoxy silane compound, One sort, such as a vinyl alkoxy silane compound, a bulking agent, colorant, a plasticizer, a hardening accelerator, a concrete retarder, a dripping inhibitor, an adhesion grant agant, an ultraviolet ray absorbent, radioal ohain inhibitor, a peroxide docomposition agent, an antiaging agent, and a solvent, or two sorts or mora can be blended auitably. [0028] [Example]Although working example is given and this invention is explained concretcly hercafter, the concrete retarder, a dripping inhibitor, an adhesion grant agent, an ultraviolet ray absorbent, radical organicity polymer (a), said amino group substitution alkoxy silane compound. One sort, such as a containing said slift group content organicity polymer (a) and a curing catalyst ingredient (B) containing said tin compound (b). In a main agent component (A), besides said slift group content chain inhibitor, a peroxide decomposition agent, an antiaging agent, and a solvent, or two sorts or vinyl alkoxy silane compound, a bulking agent, colorant, a plasticizer, a hardening accelerator, a

range of this invantion is not limited by this. [1029]3445 g (2 mol) of noe decanol or ace (4.2-dimethyloctanoic acid) and the sodium hydroxide solution 170g (sodium hydroxide, 2 mol) are massured in the 1000-mi eggipimt flask furnishad with an 225 g (1 mol) of stannous chloride, it was made to react at 60 \*\* for 20 minutes, the reaction mixture example of manufacture 1 nitrogen introducing pipe, After fully mixing with a magnetic stirrer, added was extracted with toluene, it condensed under decompression, and the tin compound a of the fluid

0030]This compound was analyzed in FT-IR, and 1738 cm of absorption <sup>-1</sup> of the carbonyl group of of light vellow transparence was obtained.

neo decanoic acid shifted to 1650 cm<sup>-1</sup>, and checked absorption of tin carbonyl. It checked that it

was SUTANASU screw noo decanoate from the result of the next ultimate analysis. Sn (%) 25.5 800 13.3 (%) H (%) (%) 52.7

25.7 52,8

are measured in the 1000-mi eggplant flask furnished with an example of manufacture 2 nitrogen introducing pipe, After fully mixing with a magnatic stirror, added 225 g (1 mol) of stannous chloride, it ,0032]The pivalate 204g (2 mol) and the sodium hydroxide solution 170g (sodium hydroxide: 2 mol)

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was made to react at 60 \*\* for 20 minutes, the reaction mixture was extracted with toluene, it condensed under decomprassion, and the tin compound b of the fluid of light yellow transperence was

0033]This compound was analyzed in FT-IR, and 1738 cm of absorption -1 of the carbonyl group of pivalate shifted to 1650 cm<sup>-1</sup>, and checked absorption of tin oarbonyl. It chacked that it was the

Sn (%) (%) (%) H 800 0034

40.3 22.0 5,1 8 32.5 200 見る語

additive agents which were obtained in the examples 1 and 2 of manufacture were kneaded, and tha (aneka Corp.) 100 weight section) mixing was carried out, the tin compound a or b and the various ouring catalyst ingredient was prepared.

component and the curing catalyst ingredient, a snap time (time until it gels in the mixad second half oom temperature of 25 \*\*, and 60% of humidity from preparation of a main agent component and a ackiness of both ingredients is lost) were measured. It went in the thermostatic chamber of tha of both ingredients and mobility is lost), and tack free time (time until the after-mixing surface 0036]About the moisture curing type resin composition which mixed the obtained main agent

0037]To the comparative example 1 - 4 silyl-group content organicity polymer (MS polymer S810 by (aneka Corp.) 100 weight section, it was shown in Table 1, and number-of-copies (number of weight of-copies (number of weight sections to silyl group content organicity polymer (MS polymer S810 by Kaneka Corp.) 100 weight section) mixing was carried out, 2-ethylhexanolo acid tin or n-tin octylate. ouring catalyst ingredient, and mixing of both ingredients to hardening. A result is shown in Table 1. sections) addition was carried out, the various additive agents shown in Table 1 were kneaded, and the main agent component was prepared. On the other hand, it was shown in Table 1, and numberand the various additive agents which are used from the former were kneaded, and the curing

component and the curing catalyst ingradient, a snap time and tack free time were measured like 0038]About the moiature curing type resin composition which mixed the obtained main agent catalyst ingredient was prepared.

4S polymer S810:silyl group end pollyether calcium carbonate: -- bulking agent NOKURAKKU NS-6: -0039]The details of the material shown in Table 1 are as follows. working example 1-8. A result is shown in Table 1.

inuvin 327: Ultraviolet ray absorbent (product LF[ made from Tokyo Fine chemicals ]-101) SUMOIRU P-350: Liquid paraffin (product made from Muramatsu Petroleum) - an antiaging agent (produot made from Ouchi Shinko Chemioal Industry)

auryl amine: — Kanto Kagaku extra-pure-reagent bis(2-ethylhexanolo acid)tin: — the day east — 4-1100. Amino group substitution alkoxy silane compound (made by Nippon Unicar) A-171: Vinyl alkoxy silane compound (made by Nippon Unicar)

Fransformation --- make -- bis(n-octylic acid)tin: -- the day east -- Transformation -- make [0040]

0035]To working example 1 - 8 silyl-group content organicity polymer (MS polymer S810 by Kaneka of-copies (number of weight sections to silyl group content organicity polymer (MS polymer S810 by sections) addition was carried out, the various additive agents shown in Table 1 were kneaded, and he main agent component was prepared. On the other hand, it was shown in Table 1, and number-Corp.) 100 weight section, it was shown in Table 1, and number-of-copies (number of weight SUTANASU screw pivalate from the result of the next ultimate analysis.

4896 2445 11時間 7時間 3.0時間 2.0時間 2.3時間 1.7時間 2.2時間 12時間 3.3 時間 2.8 時間 2.6 時間 1.1 時間 1.5 時間 0.25 年間 1.1 時間 2.8 時間 ガス(カードドリヘキナン数)種 かかフリーライス(単型) ピス(ローナクナル部)県 スナップタイム(時間) dsafty7-S810 スモイル Pー350 2±41 P-360 9-SNG6-61 ないというな STARTE 世ペト 二世 FXE>327 10.995 -1100 はた合物。 場化合物の 1111

Effect of the Invention] If the moisture curing type resin composition of this invention is used so that moisture curing type resin composition. Such a moisture curing type resin composition is useful as a clearly from Table 1, surface tack free time will be shortened compared with the conventional sealing agent, a coating agent, and elastic adhesives.

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